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The Myology of the Raven (Corvus corax sinuatus). A Guide to the Study of the Muscular System in Birds. By R. W. SHUFELDT. London and New York, Macmillan. 8°. \$4.

THIS is a very unsatisfactory work, but fortunately of a unique character. According to its contents, it may be divided into three parts. The first consists of a badly arranged and insufficient description of the muscles of the raven, which constitutes the author's own work. In this, not the slightest notice is taken of the valuable papers and monographs of Professors Fuerbringer and Gadow, which form the basis for the morphology of the muscles of birds. The author writes, therefore, from an absolutely antiquated standpoint. The second part is composed of about 70 pages in German, copied from Gadow's recent work on the muscles of birds; and the third, of a bibliography of 144 works. The author prefaces this latter with the words "Important Works and Papers treating of the Muscles of Birds, compiled, abridged, and re-arranged from the Bibliographical Lists of Hans Gadow, and Several Other Sources, as well as Many New Titles added thereto by the Present Writer."

Of these 144 titles, 134 have been copied from Gadow in every detail. A paper of Duvernoy, for instance, is mentioned by Gadow, with the words "Kuerzere Notizen" ("shorter notes"), without giving the long French title. In the author's list this paper appears also under the title "Kuerzere Notizen." The abbreviation of Gadow's list consists in the omission of the very valuable short notes attached to the titles, giving the contents of the paper. It seems to have been too much trouble for the author to translate these notes, which are of such great importance to the student.

Of the ten new titles which are given by the author, four are those of papers which have appeared since Gadow's list was published, three are the titles of little text-books, two have nothing to do with the subject, and one special paper only was published before the appearance of Gadow's list.

In the preface the author says, "To those of my readers who are familiar with German, the best works I can recommend to be consulted in the present connection are the very excellent treatises of Selenka and Gadow in Brönn's 'Klassen des Thierreichs,' and that superb monument to avian morphology, the 'Untersuchungen zur Morphologie und Systematik der Voegel,' of Max Fuerbringer."

We wish the author had studied these works himself before he gave his book into the printer's hands. Perhaps he would have given us something better. But then, we ask, why did the author use and mention, besides his own papers, but 7 of the 144 works of which he gives the titles, in his descriptions? Four of these works are the text-books of Owen, Huxley, Mivart, and Parker: the others are the collected papers of Garrod and Forbes. Milne-Edwards is noted once. From Owen's "Anatomy" the description of the muscles of *Apteryx* is copied, and from the others many a page. The works of such authors as Klemm and Meursinge, who have written specially on the muscles of the raven, are not even mentioned. The explanation is easily given: the author did not take the trouble to read and study the papers the titles of which he gives in the bibliography.

The Distribution of Wealth. By RUFUS COPE. Philadelphia, Lippincott. 12°. \$2.

THIS book is another of those ambitious attempts to remedy all the economic ills of society which issue from the press at frequent intervals; and it is about as successful as the rest. The author begins in the usual way by informing us that the distribution of wealth in our day is very unequal, and that sundry evils of more or less portentous import result from this inequality. The facts in the case are set forth with a long array of statistics showing how great the inequality is; and the conclusion is then drawn that this inequality is unjust, and must be remedied. The principal remedies proposed are the abolition or sweeping reduction of interest, the repeal of patent laws, and some not very well defined control of natural and artificial monopolies. To patent laws Mr. Cope has a special antipathy, declaring that "no other single agency, perhaps, except interest on money, is more responsible for the present inequitable distribution of wealth." "Ricardo's law of rent," he says, "appears to be a formula de-

vised as a justification of the rapacity of landlords," yet he is not a disciple of Mr. George. The internal revenue taxes on malt liquors and tobacco he declares to be a great injury to the workingmen; but he is very much in love with the protective tariff, and devotes a large space to a defence of it,—a defence very much needed in view of the recent elections. Such are some of Mr. Cope's ideas, but their merits as a solution of the problem in question are not apparent to us.

Sociology: Popular Lectures and Discussions before the Brooklyn Ethical Association. By various authors. Boston, James H. West. 12°. \$2.

THE papers in this volume, though containing many points of interest, are not equal in merit to those that came from the same source a year ago. The editor says in his preface that sociology is the name of a new science,—the science of social evolution. Now, whether such a science, as something distinct from history, is possible or not, we shall not here inquire; but it certainly cannot be found in the pages of this book. The various essays it contains are often interesting and sometimes instructive; but they present nothing that can be called a science of social development. Several of them have no relation to social affairs, the remainder being divided between historical topics and methods of social reform. Some of the historical papers are very good; but they are far from presenting a comprehensive view of social evolution, some of the main elements of which are wholly neglected. We read here about the evolution of law and politics, of the mechanic arts, the science of medicine, and some other branches of human activity; but there is nothing about the general intellectual progress of the race, nothing about the evolution of religion and morals or of ideal art, and, strangest of all, nothing about the evolution of language, the instrument that makes society possible. The lectures on social reform present successively the theological method, the socialistic method, the anarchistic method, and the scientific method. That on the socialistic method, by a man who was at first attracted by the socialistic dream, but in the end strongly repelled by it, has been to us the most interesting. The two closing papers are tributes to the memory of Professors Asa Gray and Edward L. Youmans, written with the warmth of friendship as well as of scientific enthusiasm, and describing the services they rendered to science and to education. The discussions that followed the original delivery of the lectures are not reported in this volume, except in two cases; and we regret the omission, as we found those in the former volume on "Evolution" as interesting and suggestive as the lectures themselves.

Life of Arthur Schopenhauer. By W. WALLACE. London, Walter Scott; New York, A. Lovell & Co. 16°. 40 cents.

THIS volume is one of the series of Great Writers, of which many numbers have already been issued. It gives a clear and very readable account of Schopenhauer's life, with some notice of his philosophy. The materials for a biography are indeed few; for a philosopher's life is usually uneventful, and Schopenhauer's is no exception to this rule. There were, however, certain peculiarities in his life and character, which lend a somewhat peculiar interest to his biography, and make it read like a mixture of tragedy and comedy. His pessimism is often ludicrous, especially in a man who, after his eighteenth year, had nothing to do but what he chose to do; yet his natural tendency to melancholy, combined with his inordinate passion for fame, made him not only pessimistic in theory, but often really unhappy, in fact. His philosophy was late in winning recognition, and has never attained to much prominence in the world of thought; and it was this failure to win disciples which, more than any thing else, caused his melancholy. He believed that Hegel and other professional philosophers had conspired against him, and he vents on them all the vials of his wrath. Yet his works have undoubtedly received all the favor to which they are entitled, if not more, the exaggerated estimate which he formed of their originality and importance being wholly unjustified. Meanwhile, students of modern philosophy will be glad of this brief biography of the strange author of a strange metaphysical system. His leading work has for some time been accessible in English, while more recently a translation

of some of his shorter works has appeared; and, now that we have a good sketch of his life, English readers can easily learn all they may wish to know of the great pessimist of Germany.

The Colours of Animals, their Meaning and Use, especially considered in the Case of Insects. By EDWARD BAGNALL POULTON. (International Scientific Series, Vol. LXVII.) New York, Appleton. 12°.

WITH this volume another new and valuable member is added to the classical International Scientific Series. It comes to us with the fascinating qualities which accurate and well-written accounts of animal life must have both for the general reader and the biologist. Mr. Poulton has given his book a general title, though it treats mainly of the origin of colors in insects, and more especially in moths and butterflies. This use of a general title may be excused on the ground that nearly all the difficulties in explaining the evolution of color in the animal world are met with among insects. After devoting an introductory chapter to the structures in animal tissues whereby colors are produced, the author proceeds to discuss the origin of colors by means of natural selection. Animal colors are classified as non-significant and significant; and the latter category is again subdivided into colors of direct physiological value to the organism (chlorophyl, pigment, etc.), colors of protective and aggressive resemblance, colors of protective and aggressive mimicry, warning colors, and colors displayed in courtship. Each of these classes of significant colors is then taken up in order, and discussed at length, with numerous illustrations drawn mainly from the group of lepidopterous insects. It is impossible in this brief notice to do full justice to the wealth of interesting examples with which the author presents us. Only a very small portion of the work deals with the hackneyed cases of mimicry and protective resemblance found in zoological text-books. Many of the observations are original, and others are taken from the recent works of reliable investigators. Perhaps the most original portion of the volume is that which treats of the author's own experiments on the chrysalides of the butterflies. He exposed larvae to surfaces of different colors during pupation, with results which may be briefly summarized in his own words:—

"I worked upon the allied small tortoise-shell butterfly (*Vanessa urticae*), which can be obtained in immense numbers. In the experiments conducted in 1886, over 700 chrysalides of this species were obtained, and their colors recorded. Green surroundings were first employed in the hope that a green form of pupa, unknown in the natural state, might be obtained. The results were, however, highly irregular, and there seemed to be no susceptibility to the color. The pupae were, however, somewhat darker than usual, and this result suggested a trial of black surroundings, from which the strongest effects were at once witnessed. The pupae were, as a rule, extremely dark, with only the smallest trace, and often no trace at all, of the golden spots which are so conspicuous in the lighter forms. These results suggested the use of white surroundings, which appeared likely to produce the most opposite effects. The colors of nearly 150 chrysalides obtained under such conditions were very surprising. Not only was the black coloring-matter as a rule absent, so that the pupae were light-colored, but there was often an immense development of the golden spots, so that in many cases the whole surface of the pupae glittered with an apparent metallic lustre. So remarkable was the appearance, that a physicist to whom I showed the chrysalides suggested that I had played him a trick, and had covered them with gold-leaf. These remarkable results led to the use of a gilt background as even more likely to produce and intensify the glittering appearance. . . . The results quite justified the reasoning; for a much higher percentage of gilded chrysalides, and still more remarkable individual instances, were obtained among the pupae which were treated in this way."

Warning colors are discussed at some length, and many interesting examples and experimental results adduced. There is a decided antithesis between warning and protective colors; as "the object of the latter is to conceal the possessor from its enemies, the object of the former is to render it as conspicuous as possible." It is shown that warning colors are usually accompa-

nied by a nauseating taste, strongly smelling or irritant fluids, etc. Attention is called to the fact that there is a general similarity in the warning colors of all animals, the prevalent patterns being alternating bands of striking colors, and that consequently enemies soon learn not to attack conspicuous and unusually colored animals, because a few experiments have taught them to associate these striking patterns with disagreeable tastes and odors.

In the chapter on mimicry, more examples, we think, might have been introduced. Many startling cases of *Hymenoptera* mimicked by *Diptera* seem to have escaped the author's notice. The classical case of South American heliconids and pierids, long since described by Bates, really merits fuller treatment than it has received on pp. 232, 233.

The work closes with several very interesting chapters on the colors used in courtship. This is perhaps the most interesting portion of the work, as it deals very successfully with a subject about which there is still wide difference of opinion among zoologists. Poulton takes his stand with Darwin, and maintains that the peculiar colors, appendages, etc., displayed during courtship by one of the sexes (usually the male) in the presence of the other, owe their origin to sexual selection. This differs from the standpoint taken by Wallace, who denies that the so-called secondary sexual characters thus originate. He maintains that they receive their explanation in natural selection pure and simple. It would be difficult, we believe, to explain many of the facts cited by Poulton, notably Peckham's observations on the courtship of spiders, from Wallace's standpoint.

At the end of the book is given a table illustrating the author's classification of animal colors. Although the Greek derivatives to designate the different uses of colors are well chosen, they will probably not be generally adopted. Zoologists will probably continue to speak of mimetic rather than pseudoposematic and pseudopepsimetic colors.

The text is provided with sixty six woodcuts and a chromolithographic frontispiece illustrating a remarkable case of mimicry in South African butterflies.

NOTES AND NEWS.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about a hundred and eighty dollars, will be made on July 14, 1891. Essays intended for competition may be upon any subject in medicine, and must be received by the secretary of the college on or before May 1, 1891.

—A lady, writing to the *British Medical Journal*, says she recently heard a young girl of fourteen years "whistle," as her people called it; but "warble" it really was, for she kept her mouth slightly open, and the lips merely trembled, the notes being formed in the throat, the centre of it working as a bird's does when singing, and the sounds produced were exactly like those of blackbirds and thrushes. She warbled several airs to pianoforte accompaniments faultlessly, and most beautifully modulated; and so powerful were the notes, that her grandmother, who was excessively deaf, could catch every one, without the slightest effort, in another room a little distance off. In the same room some notes were deafening when she poured them out at the *forte* parts. She had been self-taught entirely from "whistling" to her dog and sitting in the window to "warble" to the birds.

—The flora of the Kutais and Tchernomorsk regions, on the eastern coast of the Black Sea, says M. Kuznetsoff in the "Izvestia" of the Russian Geographical Society (*Nature*, Nov. 6), belongs, as already known, to the Mediterranean region of evergreen trees. Next comes the region of West European flora, characterized by the extension of the beech-tree, and offering on the slopes of the mountains the very same subdivisions as one is accustomed to see in the Alps. That region extends over the provinces of Kuban and Terek as far east as the water-parting between the Terek and Sulak Rivers. The territory to the east of it was formerly thought to have a flora more akin to that of Asia, but a distinctly European flora appears again on the eastern slopes